CLAIMS

What is claimed is:

1. A pickup mechanism for handling micro components, comprising:

a microworkpiece supplying unit for supplying micro components;

a microworkpiece orientation unit, connected with said microworkpiece supplying unit, for orientating said micro components in a specific direction, and transporting said oriented micro components; and

a microworkpiece separation unit, connected with said microworkpiece orientation unit, for separating said micro components and providing for a working device to process.

2. A pickup mechanism for handling micro components according to claim 1 wherein said microworkpiece supplying unit comprises at least a reciprocating microactuator.

3. A pickup mechanism for handling micro components according to claim 2 wherein said microworkpiece supplying unit comprises a supplying element for supplying said micro components, and an accumulator for receiving said micro components when said supplying element moves back and forth relatively to said accumulator.

4. A pickup mechanism for handling micro components according to claim 1 wherein said microworkpiece supplying unit comprises at least a swinging microactuator.

5. A pickup mechanism for handling micro components according to claim 4 wherein said microworkpiece supplying unit comprises a supplying element for supplying said micro components; and an accumulator for receiving said micro components when said supplying element swings relatively to said accumulator.

6. A pickup mechanism for handling micro components according to claim 1 wherein said microworkpiece supplying unit comprises at least a piezoelectric

microactuator.

7. A pickup mechanism for handling micro components according to claim 6 wherein said microworkpiece supplying unit comprises a supplying element for supplying said micro component; a plane for receiving said micro components from said supplying element; two vibrators connected respectively to said supplying element and said plane for shaking the two; and an accumulator for receiving said micro components from said plane; said supplying element supplies and moves said micro components via said plane to the said accumulator by vibration of said vibrators.

8. A pickup mechanism for handling micro components according to claim 1 wherein said microworkpiece supplying unit comprises at least a pneumatic actuator.

9. A pickup mechanism for handling micro components according to claim 8 wherein said microworkpiece supplying unit comprises a supplying element for supplying said micro components, and an accumulator for sucking said micro components in when an airflow coming from bottom of said supplying element blows up said micro components.

10. A pickup mechanism for handling micro components according to claim 1 wherein said microworkpiece orientation unit comprises a transferrer for moving said micro components to said microworkpiece separation unit and a stopper for selecting said micro components of specific direction.

11. A pickup mechanism for handling micro components according to claim 10 wherein said transferrer comprises a serial of microactuators and a transport belt for transferring said micro components to said microworkpiece separation unit; said serial of microactuators located under said transport belt reciprocate orderly so as to make said transport belt move in a wave motion and push said micro components along said transport belt.

12. A pickup mechanism for handling micro components according to claim 10 wherein said transferrer comprises pairs of microactuators and a micro transport belt; each

microactuator swings to a specific direction upon being electrically powered, and releases to another direction upon power-off so that one of said pair of microactuators first release upwards, then the other of said pair of microactuators are powered to swing downwards; further, said one of said pair of microactuators are powered to swing downwards, and said the other of said pair of microactuators release upwards, and thus repeat to make said micro transport belt carrying said micro components moves.

13. A pickup mechanism for handling micro components according to claim 1 wherein said microworkpiece separation unit comprises a separator, a reservoir and a transferrer; said reservoir stores orientated micro components provided by said microworkpiece orientation unit; said separator separates said micro components from said reservoir; and said transferrer transports said micro components that have been separated.

14. A pickup mechanism for handling micro components according to claim 1 wherein said microworkpiece separation unit comprises a transferrer for transporting orientated micro components provided by said microworkpiece orientation unit; and a separator for separating said micro components transported by said transferrer.

15. A pickup mechanism for handling micro components according to claim 14 wherein said microworkpiece separation unit comprises another transferrer, and another separator for separating two rows of micro components coming from two transferrers; said another separator includes two slide shutters that interchangeably reciprocate to separate said micro components one by one from the transferrers.

16. A pickup mechanism for handling micro components according to claim 14 wherein said microworkpiece separation unit comprisesa another separator for separating micro components coming along the transferrer; said separator includes two plungers that are interchangeably activated to separate at least a micro component each time from said transferrer.

17. A pickup mechanism for handling micro components according to claim 14 wherein said microworkpiece separation unit comprises a separator for separating micro

components coming along a transferrer and dividing said micro components into two paths; said separator includes a movable shutter that selectively opens one path at a time for a micro component passing through so as to control the allocation of said micro component.